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ORIGINAL ARTICLES.

THE DIAGNOSTIC VALUE OF THE FORM AND COLOR FIELDS IN HYSTERICAL AMBLYOPIA.*

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Moebius says: Hysteria is a state in which ideas control the body and produce morbid changes in its functions.

Osler gives a concise description of the ætiology of hysteria, as follows: "The affection is most common in women, and usually appears first about the time of puberty, but the manifestations may continue until the menopause, or even until old age.

"Men and boys, however, are by no means exempt, and of late years hysteria in the male has attracted much attention.

"It occurs in all races, but is much more prevalent, particularly in its severer forms, in members of the Latin race. In this country the milder grades are common, but the graver forms are rare in comparison with the frequency with which they are seen in France.

"Of predisposing causes, two are important—heredity and education. The former acts by endowing the child with a mobile, abnormally sensitive nervous organization.

"Education at home too often fails to inculcate habits of self-control. A child grows to girlhood with an entirely erroneous idea of her relations to others, and accustomed to have every whim gratified and abundant sympathy lavished on every woe,

*Read at the meeting of the St. Louis Ophthalmological Society, May 13, 1912.

however trifling. She reaches womanhood with a moral organization unfitted to withstand the cares and worries of everyday life.

"At school, between the ages of 12 and 15, the most important period of her life, when the vital energies are absorbed in the rapid development of the body, she is often cramming for examinations and cooped in close school rooms for 6 or 8 hours daily. The result too frequently is an active, bright mind in an enfeebled body, ill adapted to subserve functions for which it was framed, easily disordered and prone to react abnormally to the ordinary stimuli of life.

"Among the more direct influences are emotions of various kinds, fright occasionally, more frequently love affairs, grief and domestic worries.

"Physical causes less often bring on hysterical outbreaks, but they may follow directly upon an injury or develop during convalescence from an acute illness or be associated with disease of the generative organs.

"The name hysteria indicates how important was believed to be the part played by the uterus in the causation of the disease. Opinions differ a good deal on this question, but undoubtedly in many cases there are ovarian and uterine disorders the rectification of which sometimes cures the disease. Sexual excesses, particularly masturbation, are important factors, both in girls and boys."

Parinaud says: "In the midst of this symptomatology, so varied, so changeable, and so deceptive, the ocular manifestations are singularly constant and characteristic. Indeed these ocular signs form an element in diagnosis the importance of which was often pointed out by Charcot.

"I should not have been criticized by the great master, for asserting that during his studies of hysteria—especially of those forms seen in men and in traumatic cases—he found the eye symptoms a never failing guide in unmasking the neurosis and establishing its identity even in the presence of the most conflicting testimony.

"The ocular disorders of hysteria are of two kinds: first, those that affect the apparatus of special sense, and second, those that concern the ocular muscles.

"In spite of the close relationship existing between these two groups of phænomena, their study should be pursued in two distinct chapters."

De Schweinitz states that the investigation of the disturbances of visual sensation to which hysterics are subject has acquired much importance, and the ocular stigmata of hysteria, as Parinaud has said, constitute a symptomatology which is distinct and in some phases unvarying.

The following somewhat artificial subdivisions of the subject are convenient:

1. Complete anæsthesia of the visual sensation, or hysterical amaurosis.
2. Incomplete anæsthesia of the visual sense, or hysterical amblyopia.
3. Defective and painful visual sensation, or hysterical asthenopia.
4. Anomalies of accommodation, or hysterical cyclospasm and cycloplegia.
5. Anomalies of iris movements, or hysterical pupil phænomena.
6. Anomalies of the eyelid and eye-muscle movements, or hysterical contractures, pseudopalsies, and palsies of the palpebral and bulbar musculature.
7. Previously unclassified hysterical ocular phænomena.

It is my intention to consider principally the second of these subdivisions, that is, incomplete anæsthesia of the visual sense, or hysterical amblyopia.

Incomplete anæsthesia of the visual sense or hysterical amblyopia is a term applied to a number of different visual disturbances, of which the most important are: reduction of the visual acuity, contraction of the visual field, disturbance of the color and light sense and anomalies of accommodation.

Disturbances of the visual field in hysteria.—Many of the records of the visual field examinations in hysterics and neurasthenics are untrustworthy because no definite information is given in regard to the light, the size of the test object, the character of the refraction, the length of time employed in taking the visual field, the distance of the eye from the fixation point, etc.

Just as a certain number of hysterics have normal acuity of vision, they may also have a normal visual field for white. Pansier states that although the visual field for white may be normal, he has found a true enlargement of the color field, with or without inversion of the color circles, in all non-amblyopic hysterics which he has examined.

On the other hand, Frankl-Hochwart and A. Topolanski maintain that in hysteria with normal sensation there is usually no contraction of the visual field, and von Reuss has also noted that hysteria may exist without any changes in the fields of vision.

John K. Mitchel and De Schweinitz have observed a completely normal character of the visual field in a certain number of hysterics, or simply a contraction of the color fields with unaffected form fields.

The essential characteristic symptom of the visual field in hysteria is concentric contraction, if this is measured with a white object on a black background. The amount of the reduction of the size of the visual field varies from slight contraction, most noticeable on the temporal side, to such an extreme restriction that the most peripheral circle is just beyond the fixing point.

Binswanger has never observed "the gravest cases, in which the visual field is reduced to the fixation point," and he, therefore, differs from Parinaud, Gilles de la Tourette, and Janet. De Schweinitz states that on a number of occasions he has seen extreme reduction in the size of the visual field and can in this respect confirm entirely the observations of the French observers, concerning which Binswanger is sceptical.

The hysterical field contraction is of long endurance, lasting for days, months, and even years, and the variations in size which it undergoes, except those which are later recorded, are comparatively unimportant until recovery occurs, when the visual field again may assume its normal size.

The behavior of the contracted visual field, when it is measured with the point of fixation placed at varying distances from the observed eye, is of importance. Schmidt-Rimpler maintains that each perimetrically recorded concentric contraction of the visual field should also be investigated with a campimeter stationed at varying distances from the patient, and Wollenberg, quoted by Binswanger, found under these conditions that in the majority of cases, although not always, as the distance between the patient and the blackboard is increased, the size of the visual field is enlarged. On the other hand, Richard Greeff states that the contracted visual field maintains the same size, no matter at what distance the point of fixation of the examined eye is placed,—in other words, that the field has a tubular character; the hysteric has, to use the term which Greeff has given, a

"röhrenförmiges Gesichtsfeld." The examination is made as follows: The visual field is measured, as usual, with a perimeter, and if it is found contracted in a decided degree, the point of fixation for the examined eye is removed one metre distant and the measurements repeated. Instead of an increase in the width of the field, it may remain just as narrow as it was prior to the lengthening of the fixation distance, and the same is true if this is still further increased, to two, three, or five metres. That this observation is entirely correct I am able to confirm as the result of many examinations.

According to Greeff, the cause of the tubular field is connected with the underlying nature of the disease; that is, in hysterical patients a definite conception frequently dominates the sensorium, and this applies also to the visual field. Von Hoesslin is unwilling to admit that symptoms which are physically impossible are genuine signs of disease, and he regards the person who exhibits the tubular field phænomenon as a malingerer, and if hysteria is present, then the subject is a hysterical malingerer. Arnheim and other observers are not in accord with von Hoesslin in this contention, and I agree with them and with Willbrand, who says that "we have no right to cast the suspicion of malingering on a patient unless we are able to convict him or her of malingering."

Although the contraction of the visual field may be extreme, visual acuity may be normal; on the other hand it may be reduced. Inasmuch as in many cases the peripheral vision is completely abolished, producing typical tubular vision, if central sight is affected then amblyopia may give place to amaurosis and the condition of complete hysterical blindness. It should be remembered, however, that such amaurosis need not have—indeed, does not usually have—concentric visual field contraction as its prodrome, but appears suddenly.

According to Gilles de la Tourette, concentric narrowing of the visual field is the most frequent ocular stigma in hysterical subjects, and Dana says that it is the commonest of all forms of anæsthesia. Pitres remarks that it is one of the most frequent sensory disturbances of the great neurosis and one of the best stigmata of hysteria. Binswanger, on the other hand, writes: "The scepticism with which we regard the statements of Charcot's school (Galezowski, Parinaud, Landolt, Féré, and others) increased in direct proportion to the growth of our experience in this subject; for these investigators attribute too much im-

portance to the concentric contraction of the visual field in hysteria." The value of this symptom seems to me exceedingly great, although J. K. Mitchell and myself were unable to find it as frequently among the hysterics whom we examined as would appear to be the case in the French clinics.

It has already been pointed out that the contracted visual field is one that appears at once and not as the result of repeated examination, and that in a certain sense it is a permanent stigma, or perhaps, more accurately, an enduring one, differing in this respect from the one which will later be described in connection with neurasthenic cases. It is, however, subject to certain variations, which must now be mentioned. They are these: In unilateral visual field contraction the narrowed field may be made to disappear by irritating the skin, and to develop in the healthy eye; in short, a transfer takes place. It may be transferred to the other eye by suggestion. Also, as Parinaud has shown, if the unaffected eye be opened and the visual field, previously contracted, be remeasured, its extent may be increased. Referring to this fact, Janet suggests that under these circumstances the sensations of the sound eye bring into personal perception by a preestablished association those of the neglected eye. The extent of the field is furthermore modified by spherical glasses, by tinted glasses, and by the action of mydriatics, as has been well shown by Parinaud, Forster, and as I have frequently demonstrated. A visual field contracted for a white test-object may reach greater or even normal extent if investigated with a bright electric light.

The visual field may be diminished in size by mental condition, by physical depression, preoccupation, emotions, fixed ideas; in general terms, as Janet puts it, in a great number of hysterics the effort of visual attention contracts in a very notable way their visual fields. The variations in perimetric examinations are not necessarily dependent upon simple retinal fatigue, but, as Schmidt-Rimpler, Schultze, and others have shown, may depend upon a diminution of the cortical, physical functions, and be due to damage of the power of concentration.

Binswanger emphasizes the importance of the psychic condition at the time of examination and its effect on the visual field, and insists that patients should be methodically investigated at different times with due regard, not only to their power of concentration, but also to their emotional state, and to the pres-

ence of definite disturbances of the intellect, and, finally, to the relation of their condition to antecedent hysterical attacks.

Just as there may be a narrowing of the visual field due to an insensibility to white light, and which, in the language of Parinaud, constitutes the fundamental condition of this type of hysterical amblyopia, so also there may be an insensibility to colors, which begins at the periphery of the visual field and occasions a contraction of the color field. The color circles may be found within the narrowed circle for white exactly in their physiological order,—that is, from without inward, blue, yellow, red, green, and violet,—the entire restricted field is really a much reduced normal visual field.

Sometimes, as Nonne, J. K. Mitchell, myself, and others have shown, the restriction is confined to the color fields, while the white field remains unaffected. As long as the color fields, even though restricted, retain their normal physiological relation one to the other, such restriction, as Parinaud insists, does not necessarily indicate dyschromatopsia, but might depend on individual differences found in the normal state, or on the light and the objects employed, and upon the narrowing due to insensitiveness to white light.

Under normal circumstances the color fields when tested with saturated colors in good illumination occur from the periphery to the centre in the following order: blue, yellow, red, green, violet. Now in hysterical patients a somewhat characteristic variation is that the red field is the last to be affected, with the result that its extent may equal that of blue, so that these color lines coincide or cross one another, or it may exceed it and become the most peripheral of the color circles.

This is the so-called inversion of the color field, and represents much more certainly, again to quote Parinaud, the presence of dyschromatopsia than a mere limitation of the extent of the visual field for colors. More than this, the red field may exceed in extent not only the blue as described, but that for white, and become not merely the peripheral color circle, but the peripheral circle for the entire field.

Binswanger states that in his clinic he has observed cases in which the visual field for red was extraordinarily diminished, so that it was exceeded by the visual field for green; similar observations have been recorded by v. Hochwart and Topolanski and Wilder, and Pansier has seen the green circle become the most peripheral one. Such exceptions, however, do not destroy

the main fact, that hysterical subjects have a predilection for red, constituting a characteristic of this type of dyschromatopsia.

Coming to the question of partial abolition of the color-sense, as Landolt has pointed out, this may be confined to the most central portions of the visual field,—that is, the hysterical patients lose first the power of distinguishing violet and green, while they retain their power of perceiving the other colors. Gradually, it may be, the ability to recognize red and orange disappears, while the power to perceive yellow and blue persists; or, the perception of red, instead of that of blue, is the last to disappear. Therefore Pitres has arranged two series giving the order in which the power of recognizing the different colors is lost in hysterical dyschromatopsia; (1) violet, green, blue, yellow, red, and (2) violet, green, red, yellow, blue. In contrast to this, it may be pointed out, as Pitres has done, that in the dyschromatopsia of certain organic conditions,—for example, chronic retrobulbar neuritis, or so-called toxic amblyopia, and tabetic atrophy of the optic nerve,—the perception of red is first lost. While most observers agree in stating that violet or green is the first color to be lost in hysterical cases, Strümpell believes this entirely too schematic. J. K. Mitchell and myself noted long ago that we were not so apt to find in American patients the dyschromatopsia which has been described, although we did find the inversion of the color field to which full reference had been made, and we also noted that the perception of green was more often disturbed than that of the other colors (violet was not used in our tests), and in this respect the observations coincide with those of Landolt.

Light sense and color-sense.—In addition to the concentric contraction of the visual field in hysterical patients, diminution of the light and color-sense may be present, as has been pointed out by Parinaud, Wolfberg, and particularly by von Frankl-Hochwart and Topolanski. According to the last-named authors, sometimes, although the visual field and light-sense may be normal, whether it be accompanied by disturbances of cutaneous sensibility or not, the power of perception of one or other color—for example, blue—may be defective, and Parinaud states that wherever he has found dyschromatopsia it has been accompanied by modification of the normal white perception. He has also observed patients who, examined with the photometer, could recognize white light only when it was extremely intense, but recognized nothing when this intensity was lowered, and yet who had

a luminous impression when the previously unperceived white surface was viewed through a saturated red glass.

Von Graefe believed that hysterical amblyopia represented an affection of the outer layers of the retina and could, in general terms, be described as a disturbance of the peripheral optical apparatus. Willbrand has stated that in hysteria certain alterations exist in the visual substance of the rods and cones, and that where there was peripheral contraction of the visual field with retained central vision, these alterations were limited to the peripheral retina, but that where the amblyopia was greater, or true amaurosis appeared, they extended and the entire retina became involved. This theory seemed to be supported by perimetric examinations and the various displacement and exhaustion-types of the field of vision which result from them, the indication being that the retina is non-resistant to fatigue. Binswanger maintains, although he gives full place to the theories which have been briefly outlined, that the hysterical contracted field is the result of a cortico-sensory fatigue, and of a disturbance of the faculty of concentration.

Pierre Janet regards achromatopsia as consistent with the belief that the retina is sound, but that the visual defect is further back in the perceptive centre. Charcot also maintained that achromatopsia, and therefore dyschromatopsia, are cerebral phænomena. It has been proved that a hysterical achromatoptic viewing red on a white ground will see only a gray image, but after awhile will obtain a consecutive green image. In other words, when the green vibration reaches the perceptive centre, it is not correctly recognized, but nevertheless acts because added to the red vibration it gives the perception of white and produces the consecutive green image. Parinaud, investigating the color contrasts upon hysterical patients, found that the sensation produced by a color that is not perceived can be developed provided the complementary color inducing it is normally seen. The converse of this, however, is not true."

Every oculist has experienced the unpleasantness of having a patient whose central vision is good, but who complains of a small defect in the field while the ophthalmoscope reveals no cause for the defect. Therefore I think the following case interesting, as in my opinion the scotomata were due to an unusual manifestation of hysteria:

Miss L. T., age 22 years, a refined young lady of good education, and in affluent circumstances, consulted me October 12th,

1911. She is somewhat sallow and anæmic in appearance. Her general health has been good.

About 3 or 4 years ago a black spot, the size of a pea, appeared before the left eye; it has been there ever since, except that it may disappear for an hour or two at a time. When it is absent it will reappear if the patient uses her eyes for near vision. Lately it has increased in size.

About 5 months ago the patient noticed a dark spot, a little larger than a pea, before the right eye. This spot may be present for one or two hours, and then absent for a like period.

On testing the fields of vision the spot in the right field could not be located. The right field for white was somewhat constricted. In the left field the spot was found to be a scotoma for white, extending horizontally outward from the blind spot

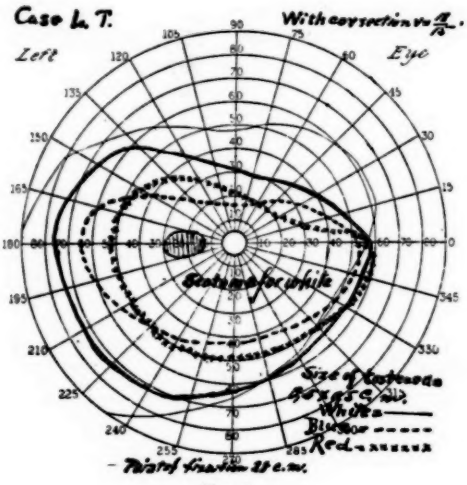

FIG. 1.

about 20 degrees and its vertical dimension was 10 degrees. The field for white was constricted about 20 degrees except on the nasal side. The field for red was somewhat larger than the field for blue, indicating a partial inversion of the color fields. (See Fig. 1.)

Both corneæ are somewhat anæsthetic. The pupillary reactions are normal. The patellar reflexes are normal. The ophthalmoscope does not reveal any cause for the scotomata of which the patient complains.

The patient's refraction and vision were as follows:

R. with +0.5 D. cyl. ax. vert. +0.5 D. sph. V=18/15.

L. with +0.5 D. cyl. ax. vert. +0.5 D. sph. V=18/15.

This correction was prescribed, and the patient found the glasses very pleasant and also helpful in near vision.

On October 24th the scotoma in the left field (the older one) had not changed any. In the right field a scotoma for white was now found situated 5 degrees to the nasal side of the point of fixation; it was slightly oval and covered about 5 degrees of the arc. (See Fig. 2.) Both fields were somewhat constricted.

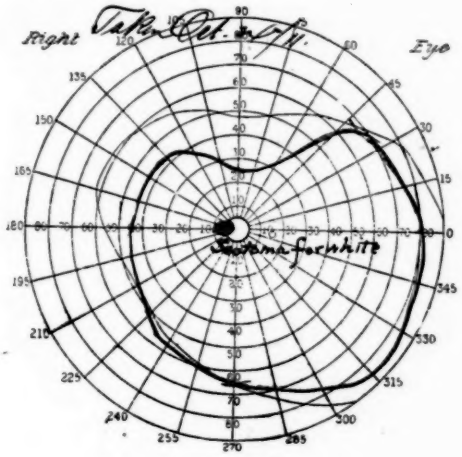

FIG. 2.

On November 7th the left field and the scotoma remained the same. The scotoma in the left field was of the same size as described, but had moved away from the point of fixation to the lower nasal quarter of the field.

Both fields for white were still constricted, and there was also a fairly well marked inversion of the fields for red and blue.

MEDICAL SOCIETIES.

AMERICAN OPHTHALMOLOGICAL SOCIETY.

Reported by Mrs. M. C. Repp, Philadelphia, Pa.

The Forty-eighth Annual Meeting of the Society was held at the Hotel Chelsea, Atlantic City, N. J., on Wednesday and Thursday, June 12 and 13, 1912.

Dr. Edward Jackson, Denver, Colo., President, in the Chair.

Dr. E. Jackson, Denver.—*Management of the Capsule in Cataract Extraction and Afterward.*

In extraction of cataract linear division of the capsule at the upper margin of the pupil avoids the inflammatory complications liable to arise from incarceration of the capsule, or the presence of cortex in the anterior chamber; and gives as good visual results as are obtained from the primary operation by any other means of opening or removing a part of the anterior capsule. Capsular after-cataract sufficient to justify division of the pupillary membrane arises in 50 per cent of cases so operated upon. Division of the pupillary membrane is a safe, efficient operation, causing little pain or inconvenience, if done with a knife-needle of the Hays-Ziegler type, entered through the vascular tissue of the limbus, and made to cut by a to and fro movement; to make two incisions in the capsule that entirely join each other at an angle. This method of treating the capsule in connection with cataract extraction, seems to be easier, safer and more certain to give a useful eye than any other method now in general use for senile cataract.

Dr. Robert Sattler, Cincinnati, Ohio.—*The Relative Value of recent Improvements in Cataract Extractions.*

No method of cataract extraction has undergone a more progressive advance than linear extraction, which for so long has been and still continues to be the almost universal practice because of the safer and easier technical execution of its opening incision, iridectomy, capsule cutting and lens expression, in spite of the commonly admitted inefficiency of its lens delivery. Of the newer methods that of Smith provides a safe and suc-

cessful lens delivery in its unbroken capsule. The claims in favor of the Smith method are its bloodless opening incision, its smaller iridectomy with lesser amount of hæmorrhage and its joint removal of lens and capsule with permanent and complete clearance of the pupillary area. The objections to the Smith method are that the corneal wound cannot be accurately estimated, and, if it is necessary to enlarge it, this has to be done by approaching the margin of the cornea and thus the advantages of the incision are lost; there is also produced in many cases a high astigmatism. I have long adopted different standards for my patients as regards vision after operation. For those of intellectual inferiority a restoration of useful vision which approaches or exceeds 0.5 is regarded as sufficient for their needs and I emphatically discourage subsequent surgery. For mechanics and professional persons whose ambition is to resume their wonted occupations a higher standard is upheld, but even for the latter classes, if restoration of vision equal to or exceeding 0.7 is brought about, on general principles of safety, further surgery is discouraged. Until this is achieved, every possible safe means is employed and for these cases the most careful purposive selection for lens delivery is practised and in particular the important advantage of intra-capsular removal whenever it is expedient and justifiable.

The above two papers were discussed jointly.

DISCUSSION.

Dr. S. Lewis Ziegler, Philadelphia: As to the visual results after cataract operation, I think that they are relative and I think they depend a great deal, not upon the operator, but upon the refractor. You may have a beautiful operation but your assistants may not succeed in getting a good result, where if you sit down and do careful refraction you will probably find that you have a perfectly normal vision.

Dr. C. H. Beard, Chicago, Ill.: As I understand Dr. Jackson's linear cystotomy it is in effect the same as Knapp's peripheral cystotomy. In most of our cases of extraction we do not have at any time a large pupil, and, if I am not mistaken, to make a cystotomy through an ordinary pupil with a cataract knife would of necessity limit the extent of the incision considerably. Dr. Jackson's cystotomy must be within the limits of the pupil. In reference to making multiple incisions in the capsule I think that if we were to be able to see our incision many of us would be

surprised to see the result of these so-called geometrical figures in the capsule. I believe there is a good deal of moonshine about it. When you have made the Knapp peripheral incision, you at once see the lens pop up, and, when it pops forward, it tears the capsule in different directions. Our ability to make incisions to cross at different points is rather problematical. Also, in regard to the after-cataract, I think the single incision there is all that is necessary. My preference for the knife for this secondary operation is really a diminished form of Graefe's knife. I have for a long time used for this purpose the worn out Graefe knives, which to be properly formed should be one continuous wedge-shape.

Dr. W. Gordon M. Byers, Montreal, Canada: I should like to emphasize again very strongly what I said two years ago before this meeting, that altogether apart from the practical advantages of the peripheral incision, the benefits of which are readily appreciated by anyone who follows it, no other method of needling is justifiable. The frequent presence of pyogenic organisms in the conjunctival sac has been so well established and the much greater rapidity of healing following a conjunctival wound than in one through the cornea is so well known, that I feel that a man who does an incision through the cornea is practising very bad surgery and doing something that is very wrong and unfair to his patient; and I should like to say too that any operation which involves a wound through the cornea, in view of our present bacteriological knowledge, has to show some tremendous advantages to make it take the place of one which includes a proper conjunctival flap. I think these points have been altogether lost sight of.

Dr. Percy Fridenberg, New York City: I believe the Smith method has a field of usefulness in selected cases. I think that the fact that it rapidly matures a partial cataract is one great point in its favor, especially in those cases where there is involvement of both lenses. Those who have seen the operation done with very superficial and wide separation of the capsule without stirring up the lens substance itself and by using the excellent knife devised by Smith, which cuts without tearing and does not require to be plunged deep into the lens and has its shank adjusted in such a way that it will nicely stop up the wound and does not allow the aqueous to escape, will be gratified by its rapidity. (Smith capsulotomy.)

Dr. R. L. Randolph, Baltimore, Md.: I was very glad to hear

the point brought out by Dr. Jackson as to the point in the cornea in which one must make the incision. I thought that this habit of making the entrance of the anterior chamber out into clear cornea had disappeared, but had occasion to visit a hospital a year or two ago and I was shown two cases operated upon by different members of the hospital staff and within ten days or two weeks; in each case there was a little gray area which showed the point of the entrance to have been in the cornea.

Dr. S. D. Risley, Philadelphia: To make these incisions and operations on paper and to make them in the cataract eyes is quite a different proposition. In the first place in making an incision through the capsule and endeavoring to join it with another cannot always be successfully done. The simpler we can do things and the less injury we make to the eye the better.

Dr. R. A. Reeve, Toronto, Canada: I believe that now, as always, no one operation is suitable for all cases; and though I admit the great advantages of Dr. Ziegler's needle and his methods and that spoken of by Dr. Jackson, I still think that in a small percentage of cases the original Bowman double needle operation for capsular cataract is the best. It is indicated in cases where the tissues are so thickened by proliferation of the epithelial layer and matting of the tissues that a knife point however sharp will not go through the membrane without traction on the ciliary processes, the very point of danger that we all agree is to be avoided.

Dr. Peter A. Callan, New York City: We have all our own methods and I advise those who have a good method to stick to it. In regard to secondary cataracts, I feel very strongly on the subject. If we take a piece of gold beater's skin and put it on a drum and then try to make a V-shaped incision such as recommended, the first is a cut but the second is more or less of a drag. Unquestionably the tension is taken off and the result is the tearing which we all should avoid. There is no method so safe and so sure of giving an opening and a permanent opening than a De Wecker scissors or some similar scissors. You cut every time without any traction.

Dr. Samuel Theobold, Baltimore, Md.: We were all brought up many years ago with the belief impressed upon us that traction upon the ciliary body was the cause of many of these post-operative complications after the use of the needle-knife. It seems to me since the Major Smith operation has been intro-

duced that it is very evident that there was more fear on that point than necessary, for nothing could be more severe or magnified than traction on the ciliary body in dislocating the lens in the Major Smith operation.

Dr. E. Gruening, New York City.—*The Combined Operation of Sclerectomy and Iridectomy in Chronic Glaucoma (the Lagrange Operation.)*

In my experience, if this operation, as first described by Lagrange, is properly performed with a well applied conjunctival flap, the wound closes in a short time, the anterior chamber is restored and the intraocular tension is more permanently reduced by filtration in the combined operation than in the simple iridectomy. In the past two years I have performed this operation twenty-one times on patients ranging from 23 to 82 years of age and with intraocular tension varying from 35 to 55 mm. mercury. The tension was permanently reduced in each case with decided improvement of vision in the majority. In most of the cases it was necessary to use general anæsthesia.

DISCUSSION.

Dr. Robert Sattler, Cincinnati, O.: We are certainly indebted to Dr. Gruening for sounding this note of warning in connection with this operation, which is certainly not an easy operation. I saw it performed by one operator and was disagreeably impressed. It was necessary in this case to resort to double fixation before the little bit of sclera could be excised. I personally have not had cases, although I have been on the lookout, in which the operation might be indicated. It is certainly a point of great interest to all of us to be warned as Dr Gruening has warned of the possibilities that attend the making of such a large section.

Dr. R. A. Reeve, Toronto, Canada: There is an operation which in my experience is as simple or indeed simpler, that is trephining, the modification by Elliot of Madras, where you dissect off the conjunctival flap. I presume all are familiar with it. Dissect this off very carefully, going down to the sclera, because in Elliot's operation you dissect right into the limbus. It does not correspond to Tree and Fry's operation. It aims at opening the peripheral part of the anterior chamber so that part of it is in the cornea. In some cases I have done it a number of

times; passing in fine forceps you can succeed in making a buttonhole, taking out a piece of iris, when the effect of the operation is doubtless increased. Then you replace the flap. You do not require sutures. You do not require a general anæsthetic. You do not disturb the intraocular structures as in Lagrange's operation as he does it and in my experience there is very little reaction.

Dr. S. Lewis Ziegler, Philadelphia: I think that this point that Dr. Gruening has brought up in regard to the size of the incision is probably very important because the illustrations of Lagrange are beyond reason. The advantage, it seems to me, which we prefer to gain from Lagrange is less firmness of cicatrix, but the disadvantage of the marked filtering cicatrix is a slight elevation under the lid. The more successful you are with the operation the more pronounced you have this slight elevation. So far as the comparison is concerned I do not think that the Lagrange operation is so difficult to perform. I think that the Elliot operation is a slightly more dangerous operation because of trephining. I think I perfer the Herbert operation in which you make the incisions on both sides of the sclera back from the wound.

Dr. J. Herbert Claiborne, New York.—*A Piece of Glass in the Crystalline Lens, with Description of the Eye Three Years and Half after the Accident.*

In November, 1908, the right eye of a boy of 16 was injured by the explosion of a glass vial. A cut 4 mm. long was found in the cornea 3 mm. from the scleral margin. There was no iridodialysis though there was prolapse of the iris from the wound; this prolapsed portion was excised. Two days later the blood had cleared away enough so that I could determine that the lens was not dislocated, but there was a dark smudge in it and in the vitreous behind the lens. The wound healed in five weeks when an x-ray picture was taken which showed to the rear and inner side of the lens a piece of glass about 4 mm. long. After eleven months the patient was allowed to return to school and has been using his eyes constantly since without discomfort. The vision with correction is 20/30. There are several small points of opacity which seem to indicate the slow formation of cataract.

DISCUSSION.

Dr. Samuel Theobald, Baltimore, Md.: A case somewhat similar to this occurred in my practice about forty years ago. A young man was making a chemical experiment with a test-tube. The tube exploded and a little spicule of glass passed into the anterior chamber and when he got to my office it was hanging by a bit of membrane from the upper margin of the pupil. While he was in the office it dropped out of sight. There was, as might be supposed, a sensory reaction; the eye became red and sensitive to light, but after a short time the inflammation subsided. Of course it became encysted and was sterile. From that day to this he has been none the worse for the glass in the ciliary body. He does not know the difference between the two eyes. I saw him not many months ago.

Dr. W. E. Lambert, New York City: I had an opportunity of seeing this case that Dr. Claiborne has reported before the x-ray picture was taken. Although it was very difficult to demonstrate the fact that there was a foreign body there, I think it was my impression that there was and I think I advised an effort being made to remove it. I was probably emboldened in that idea because I had rather a fortunate experience in getting glass out of the eye in a young man. He was playing tennis—he was a myope wearing glasses—the glass was struck with the racket and quite a large piece was embedded in the lens. I saw him within two hours of the accident and the presence of the glass was clearly demonstrated. The next day I had a consultation with Dr. Bull, who felt inclined to leave it and make an effort to get it out when the lens became sufficiently opaque to justify its extraction. We waited for a few days and he developed rather alarming symptoms, swelling, with considerably increased tension and pain. Dr. Bull advised waiting but I wanted to take it out. The result was we made an effort to remove the glass. An incision was made in the periphery of the cornea with a large keratome and the lens substance evacuated. It was difficult to make out the foreign body; we could not see it. However, I introduced a wire loop and got the glass. The result was very satisfactory, he has 20/20 vision. I recall another case of foreign body in the lens which ended rather disastrously. The man, a military officer from Rio Janeiro, came up to New York, having a history of some injury to the eye and some effort to remove the foreign body. We had an x-ray picture made by Dr.

Dixon which demonstrated a small foreign body in the lens. At the time I saw him the lens was completely opaque. We made an incision and did capsulotomy and removed the lens and with it the foreign body. The man did well for a few days and on the fourth day showed endogenous infection symptoms and finally lost his eye from panophthalmitis.

Dr. S. Lewis Zeigler, Philadelphia: I had a case somewhat similar to this from an explosion of an electric lamp globe in which a small spicule passed into the lens and ultimately produced calcification of the lens. These spicules of glass will travel. I recall a case: the lady's spectacle lens was broken by some boys throwing stones. A small spicule of glass passed into the eye and was visible in the fundus. It was not removed because vision was so good and she declined an operation which would have been very difficult because of the inability to clearly see the small foreign body, and this small spicule passed out through the sclera and was embedded in the muscle below and there was insufficiency of the muscle amounting to 30° to 35°. Eventually it appeared in the conjunctiva and was removed. So that like small needles in the body the spicule of glass is likely to travel.

Dr. William M. Sweet, Philadelphia: I reported in 1905 the case of a man, a locomotive engineer, who had a piece of glass in the eye not suspected at the time. I saw him six months later with a severely inflamed eye. An x-ray picture was made and showed a piece of locomotive gauge in the posterior chamber in close vicinity to the ciliary body. I operated, made a corneal section with the keratome and managed to secure the piece of glass. The wound healed nicely and the man had a useful eye afterward. In regard to x-ray examination of these injuries from glass: I would rather see any other case than that of injury from glass coming to me. I think in these injuries from glass you are as likely to have sympathetic inflammation from sharp glass as from any other body. Before we had the x-ray prism tube for glass and stone, I saw a case under the care of a physician in Philadelphia, in which the lenses had been broken. The eye was treated for five or six weeks and then sent to Jefferson Hospital with sympathetic inflammation in the other eye. There was a small piece of glass embedded in the ciliary body. I believe in those injuries in which we cannot say positively there is no glass in the eye and in which inflammation still continues in the eye, such an eye should be removed.

Dr. C. H. Beard, Chicago, Ill: Probably some of the members recall a case of glass in the eye that I published some years ago, I think in *Knapp's Archives,* that gave me a suggestion in regard to the handling of a bit of glass or foreign body of any kind in the posterior chamber. It is well known that a foreign body is not tolerated in the posterior chamber anything like it is in the anterior chamber. The patient was a chemist in the Standard Oil Co. He experimented with certain gases at a retort, it exploded and one piece went into the eye. There was a wound in the cornea and just a tiny speck on the anterior capsule. It was at first thought that the foreign body had penetrated the anterior capsule. There was no shadow to the x-ray. The eye would flare up with tremendous inflammation and then subside. I put him into the hospital twice. Finally, it quieted down so that I ventured to send him home. The very first night he was home he went down into the basement to look after the furnace and in order to see into the grate bars of the furnace he almost stood on his head when he felt something move in his eye. He came back to me and there in the anterior chamber was the glass as plain as could be. The explanation of it was that in getting down in that position the glass slipped from the posterior surface of the iris and fell into the anterior chamber. That would certainly be one way in which a foreign body may be made to move from the posterior into the anterior chamber, where it could be better dealt with.

(*To be concluded in the August number.*)

OPHTHALMIC SECTION

OF THE ST. LOUIS MEDICAL SOCIETY.

Meeting of February 7, 1912.

A Simple Lacrimal Syringe.—By Dr. W. E. Shahan.—(Has been published in full with illustrations in the AMERICAN JOURNAL OF OPHTHALMOLOGY).

DISCUSSION.

Dr. Loeb: I would like to ask if boiling the syringe does not destroy the elasticity of the rubber bulb?

Dr. Ewing: I have used the syringe myself for some time in place of the one that, as some of you may remember, I suggested a number of years ago. It is more easily controlled than those with a piston. The ease with which it may be sterilized is a valuable consideration. I have found it very reliable and with the finer points there has been no trouble in entering the smallest canaliculus with it.

Dr. Gross: I saw the syringe that Dr. Shahan devised a couple of years ago, with a gold point and glass, and after some little experimentation I succeeded in making some for myself and have used them ever since and I would not want to be without them. I found them very satisfactory. I find that I can sterilize them very well in strong carbolic acid and other solutions and have not found it necessary in that way to boil them. Even with a gold point I find they are very satisfactory and I should think with a platinum point they would be even much better.

Dr. Green: Dr. Shahan was kind enough to give me one of these syringes and I have used it on one or two occasions and found it very satisfactory. I have been using the ordinary Dunn syringe, and Dr. Shahan's device, in its easy manipulation and general lightness, resembles this syringe very much.

Dr. Shahan mentioned the possibility of using a syringe of this type in irrigating the anterior chamber. Last September I saw, at the New York Eye and Ear Infirmary, a glass syringe with a delicate curved tip for irrigating the anterior chamber, and it struck me at the time that that was too fragile an instrument to use under those circumstances. I could readily imagine that a sudden turn of the eye might break off that glass point in

the anterior chamber. Now, if you had a metal or platinum point, that danger would be eliminated.

Dr. Jennings: I am sorry I did not hear all of the paper. Some years ago I discarded the use of the ordinary lacrimal syringe as being too clumsy and now use an ordinary hypodermic syringe with a special olive pointed tip. It strikes me that this point is rather sharp and one might make a false passage with it. Often when there is a stricture at the top of the nasal duct I find it is a great advantage to put the tip of my syringe into the lacrimal sac and even into the duct. In ordinary cases, however, I can see that this syringe has many advantages over the usual type of lacrimal syringe.

Dr. Shahan, in closing: With regard to the boiling of the syringe, of course the rubber caps are subject to the usual heat restrictions. But these can be boiled a number of times without harm. When one has been used until it fits too loosely, throw it away and put on another. As to their fragility, they will stand enough force to permit of the insertion of the point into the tissues. With regard to the tip being too sharp, that is possible with some of these I have here this evening. Platinum is rather soft and it is an easy matter to vary the sharpness or the bluntness of the point to suit varying tastes and conditions. This is done with a fine file or oil stone.

Implantation Operations as Substitutes for Simple Enucleation of the Eye.—By Dr. John Green, Jr.

The paper discussed various methods recently proposed as substitutes for simple enucleation of the eye. All aimed to secure a more solid basis for the glass eye, so that it might have more prominence and a great amplitude of lateral and vertical motion.

In Mules' operation, a glass sphere is sutured into the eviscerated scleral cup. In successful cases the cosmetic result is excellent. Fear of sympathetic disease has prevented the general adoption of this method.

Within the past two years operators have sought by implanting various substances, solid and semi-solid, into Tenon's capsule, to create a more or less prominent stump. Efforts in this direction have been along two lines: (1) the implantation of solid balls (mainly glass, gold, or platinum), or (2) the implantation of fat tissue into Tenon's capsule.

The Frost-Lang operation (implantation of a metal ball in Tenon's capsule) is strongly advocated by Sweet, who is convinced that the danger from sympathetic disease is insignificant. Motility of the prosthesis is remarkably good, measurements of the arc of rotation of the artificial shell in 12 cases showing an average upward rotation of 23°, downward of 40°, inward of 21°, and outward of 19°.

Schmidt performs a typical Mules' operation, but substitutes for the glass balls, spheres cut from the femur heads of oxen, which have been calcined over a Bunsen burner.

Fat implantation was first suggested by Barragner in 1910. Recently Marx, experimenting on rabbits, eviscerated and filled the scleral cavity with fatty tissue. Subsequent histologic examination showed new vessels penetrating the fatty tissue, associated with the formation of young connective tissue. Eventually the fat cells disappeared, but fat and necrotic tissue remained for a long time in the cavity.

Lauber has implanted fat in Tenon's capsule on 37 occasions. A suitable piece of fat obtained by making an L-shaped incision in the abdominal parietes is placed in Tenon's capsule, which is closed by catgut sutures. The recti tendons are approximated and the conjunctiva closed with interrupted silk sutures.

Terrien and others have had considerable degree of success implanting the eye of a rabbit in Tenon's capsule according to Frost's method. Another suggestion is that of Haseltine, who implants a ball made of catgut.

The various implantation methods outlined above, uniformly provide a good bed for an artificial eye. Occasionally the cosmetic result is so perfect that it is difficult for the casual observer to tell which is the natural and which the artificial eye. Cases of sympathetic disease have been reported after these procedures, but in no case is it certain that the sympathetic trouble might not have arisen, even after a simple enucleation.

DISCUSSION.

Dr. Shahan: I would like to say, with regard to the selection of material for implantation as Dr. Green has indicated, it is very difficult to know just what is best. It is well known that glass, after prolonged contact with even weak alkalis, such as the lacrimal secretion, slowly becomes eroded; and if the commonly experienced extrusion of glass balls in the past has been due to irritation of surrounding tissues by such an eroded sur-

face, then the greater security of implantation provided by the Frost-Lang operation will postpone but not obviate the ultimate extrusion of the glass ball. Happening to be in Wiesbaden in 1909, one of the Muellers, who was extending me the courtesy of explaining the technic of glass eye making, volunteered the information that of all the glass globes he had known of being implanted, only one was still doing service after fifteen years, all others had been extruded. On theoretical grounds, it appears to me that paraffin, particularly the harder varieties, might offer more promise of permanency and freedom from mechanical irritation than glass.

Dr. Shoemaker: Dr. L. Webster Fox told me he had formerly used the glass balls but that he was not satisfied with the results, so he discarded the use of them entirely and for some time had been using gold balls. He used the gold balls in quite a large number of cases and he is very much in favor of the operation with these balls. He thinks it gives a much better result. Personally, I see only one advantage in it and a number of disadvantages. The advantage is that it does prevent the sinking of the upper lid which is noticed sometimes when the globe is enucleated. The disadvantages that I see are, in the first place, it makes a much more difficult operation and in the second place you cannot use a reform eye, but have to use a shell eye over a ball of that kind, and the shell eyes having sharper edges are more irritating than the reform eye, and moreover they are much more easily broken. I can see a decided advantage in the use of a ball implanted in Tenon's capsule when we have to use a shell eye, as there is a cavity in the back of the shell which becomes filled with the tears, and certain movements of the eye will cause the ears to gush out over the cheek, which is very annoying. With the reform eye the cavity is much smaller. I do not know that we get any better motility with the implanted ball than without it, although Dr. Fox seems to think that we do. However, I have seen just as good motility with the reform eye without the implanted glass ball back of it as we have in most cases with it.

Dr. Woodruff: I suppose this is hardly the time to discuss the advantages of evisceration over enucleation. I would like to relate an experience I had with a gold ball that had been implanted some fifteen years previous to the time I saw the patient. There was plainly a sympathetic irritation set up in the fellow eye which promptly subsided when I removed the gold ball. It

was somewhat rough but I think that was in the making and not as a result of the secretions acting on the ball. It seems to me that if we put a reform eye over the muscles as they are naturally inserted instead of putting in sutures, we will get a better adaption of the reform eye to the muscular insertion, and I believe will get better motion than we could with these implantations. The added risk of inserting a foreign body in the capsule is to be taken into consideration. The patient has but one eye and I think there is greater danger of irritation and inflammation when a ball has been inserted than when it has not, and a patient with one eye cannot afford to take such chances.

Dr. Shahan: I would like to ask Dr. Woodruff, with regard to this last case, whether there was tenderness or inflammation around the ball at the time the inflammation started in the other eye.

Dr. Woodruff: Yes, there was.

Dr. Loeb: About two years ago quite an extensive article appeared in French, by Dr. G. Bonnefon, which went very extensively into the question of implantation of foreign bodies in Tenon's capsule. He divided it into three divisions: first, those of the foreign bodies of the character of metal; second, of the character of sponge, etc.; and third, foreign bodies consisting of actual living tissue. The first he discarded absolutely as he said that sooner or later they always come out, and the second also were not of value because they were more or less absorbed and the stump shrank so that the prosthesis did not get any better support than if a simple enucleation had been done. The third, the implantation of a rabbit eye in Tenon's capsule, according to the methods first used, was also a failure for the reason that the cornea sloughed and the eye, acting as a foreign body, came out. Then the idea of turning the eye-ball around so that the cornea, instead of facing forward, faced backward, was adopted and by suturing the recti muscles over this and then the conjunctiva over that uniformly good results were obtained. The stump always remained in situ, there was never any sympathetic ophthalmia and the results were very good. I have had no experience with this, but the first time a suitable case comes up, I shall use the method.

Dr. Green, in closing: I am not in a position to take sides on this question, one way or another. I feel that if we can, with safety to the remaining eye, produce a better cosmetic result with greater motility of the artificial eye, we ought to do it. In

regard to paraffin implantations, the experience of Dr. Chas. N. Spratt might be of some interest. Some years ago, Dr. Spratt wrote a paper on the basis of his experience and that of other operators with the implantation of paraffin spheres in Tenon's capsule. The stump was prominent, there was no sinking in of the upper lid and the prosthesis was movable. Many of these operations were performed at the Massachusetts Charitable Eye and Ear Infirmary, and some of the patients were kept under observation for varying periods. In some the ball had been extruded, in others the paraffin had broken into fragments and had become disseminated in the tissues of the orbit. (Above statement is based upon information supplied by several attending surgeons of the Eye and Ear Infirmary, with whom I had the opportunity to discuss the matter last summer). So, apparently, paraffin is not a good substance for implantation. If we take Sweet's figures as representing with some degree of accuracy the degree of motility after a solid implantation, the motility is surely much greater than the motility of a reform eye, after simple enucleation.

Report of a Case of Retinitis Pigmentosa sine Pigmento (Exhibition of Patient).—By Dr. J. F. Shoemaker.

Dr. J. F. Shoemaker reported a case of degeneration of the retina, with concentric contraction of the visual fields to within five degrees of the point of fixation, in a young man 26 years of age. There is no history of any other case of this trouble in either his immediate or distant relatives and no consanguinity on the part of the parents. The visual disturbance has come on since he was twenty years of age, although he could not see well at night, for a time following an illness when he was five or six years of age. After a short time this disappeared and no trouble was noted until after he was twenty years old, when the night blindness returned. His central vision, which is impaired by posterior capsular cataracts, is 18/48+ in the right eye and 18/60— in the left eye. The retinal arteries are markedly contracted and there is a slight paleness of the optic nerve heads. No deposits of pigment in either the retina or choroid. He has vision in the temporal field from the 60th to 90th degrees in the right eye and from the 80th to the 90th degrees in the left. The degeneration evidently is of the same character as that in retinitis pigmentosa, but in this case the pigment deposits are lacking.

DISCUSSION.

Dr. Post: I would like to ask the doctor whether, in this case, there was any defect in the hearing?

Dr. Shoemaker, in closing: I have not had this man's hearing tested, but it seems to be quite normal. I might say that in addition to this case I saw a case in the O'Fallon Dispensary five or six years ago, a young negro, who, after an attack of illness, came in with markedly contracted fields. The fields of vision were so contracted that he could not walk around without being led, yet his central vision was 20/19. The retinal vessels were even more contracted than in this case. I saw him only once and did not chart his field of vision but I am sure it was not as large as this man's, but whether he had any peripheral vision or not, I do not know. In view of the theory advanced by some authors that the exciting cause may be a fever, or some infectious disease, I am inclined to believe this was a case of retinitis pigmentosa.

PHILADELPHIA POLYCLINIC OPHTHALMIC SOCIETY.

Meeting of April 11, 1912.

Dr. Wendell Reber in the Chair.

Dr. George Derby, of Boston, Mass., spoke by request on "*The Treatment of Tuberculosis of the Eye.*" About four years ago we established a class for the treatment of tuberculosis of the eye at the Massachusetts General Hospital. We have a large clinic and get a number of cases, so that it is worth while having a special organization. We have perhaps 15 patients in the active stage of the disease coming at a time. We have handled 140 cases since starting four years ago. The manner in which the class is run does not differ from the ordinary tuberculosis class. The cases are referred to us from the various clinics, sometimes with a diagnosis and sometimes without a diagnosis. We then send them to the hospital and observe them. They are given the tuberculin test and watched for reaction in the eye. Having made the diagnosis the patient is registered in the class. The case is treated by the general medical man and an ophthalmologist. A social worker looks after the patient out-doors.

We have a nurse who weighs the patient. In acute cases we insist on their keeping out-doors most of the time and some of them sleeping there. The most severe cases are not very satisfactory to treat at home and during the last two years we have treated them at the hospital. Sometimes we send them to a sanitorium.

Those that are treated at home are made to keep a book and state in it how many hours they are out-doors and how much they eat. They take their own temperature and record that in the book. Very few of these patients run a temperature. We make them take an extra amount of nourishment.

I think tuberculin should be used very carefully indeed. We use a filtrate ordinarily, using about 5/10,000 of a mm., watching their general symptoms and taking their temperature. We have had somewhere around 140 cases and the results have been very satisfactory.

DISCUSSION.

Dr. Posey asked if they had many negroes in this class, as he believed that tuberculosis of the eyes was particularly common among the negroes; that the worst cases he had ever seen were among them.

Dr. Derby said they had had a colored man with tubercular conjunctivitis and a colored boy with phlyctænulosis.

Miotics in the Treatment of Chronic Non-Inflammatory Glaucoma.—Dr. William Campbell Posey.

Dr. Posey said that he continued to be impressed with the value of miotics in the treatment of glaucoma, although he wished to caution against their permanent employment in any but the non-inflammatory forms of this disease. To obtain good results from miotics, they should be used four times daily without interruption, the pupil being maintained at almost pin-point contraction the entire time. Conjunctival irritation should be avoided by carefully and repeatedly cleansing the conjunctival sac with boracic acid lotion 15 minutes prior to the instillation of the miotics, and by exercising great care in the preparation and renewal of the drugs, nothing but sterile solutions being used. Droppers should be repeatedly boiled and at all times kept perfectly clean. It was well to employ but weak solutions of pilocarpine and eserine at the commencement of treatment,

to avoid spasm of the iris and ciliary muscles, pilocarpine gr. 1/5 to the ounce being first employed and the dose gradually strengthened until at the end of 12 months the pilocarpine was used in a strength of 2 grains to the ounce; eserine in half that dosage. It was his custom to employ pilocarpine through the day, but to make the final dose at bedtime eserine. If miotics were used in this way, their effect upon the conservation of vision was remarkable, and recent observations had confirmed his original studies that no form of operation equalled the results obtained by their use in chronic glaucoma.

DISCUSSION.

Dr. Zentmayer said that there is a large class of patients in which it was manifestly impossible to carry out a line of treatment that required the constancy and care called for in the miotic treatment. This applies particularly to dispensary patients, and except in those well advanced in years this method has no place. He would advise operative treatment in an individual under 50 years of age in any station of life, because it is too much to expect of any one to persist in such discipline for the rest of his life. In some cases, however, where iridectomy is impossible or where from the nature of the visual field it would seem hazardous to perform it, the miotic treatment would be indicated in the aged, or cyclodialysis in younger individuals. Of the filtration operations he prefers the Lagrange. It requires no special instruments, gives a large cicatrix and the incision is so placed that it opens up the angle of the anterior chamber and also communicates with the suprachoroidal space.

Dr. Reber: I can only repeat several things that were brought out yesterday before the class. There are three phases of glaucoma. The first class is the one that frankly calls for operation and we have only to decide what operation shall be done. The second class does well on miotics. Thirteen years is the longest I have ever had a patient keep up the use of miotics. Hers was one of the few cases I have ever known where the patient really will be careful all the time in the use of the miotics. The third class is made up of the doubtful cases of non-inflammatory glaucoma with gradually diminishing vision and slowly contracting visual fields. It is one of the nicest points in surgical judgment to determine sometimes whether such cases shall take the risk of operation. If operation is decided on, my own preference would be for some form of trephine operation.

Dr. Reber presented two cases of ptosis in whom the Hunt Tansley operation had been done—one in a bilateral ophthalmoplegia, and one in a post-traumatic ptosis. In both the results were particularly good. He briefly reviewed the history of the operation and stated his preference for the method mentioned.

Dr. Zentmayer: "Do you denude the cutaneous flap of its epidermis?"

Dr. Reber: "Yes."

D. Forest Harbridge, M.D.,
Secretary.

ABSTRACTS FROM MEDICAL LITERATURE.

By J. F. Shoemaker, M.D.,
St. Louis, Mo.

MEDICAL TREATMENT OF THE PATIENT BEFORE OR AFTER THE CATARACT OPERATION.

D. W. Greene (*Jour. A. M. A.*, December 2, 1911) says that medical treatment of the patient should begin a week or more before the operation for removal of a cataract, in order that the general health should be at its best and the eye and its adnexa should be free from such conditions as dacryocystitis and conjunctivitis, thus lessening the danger of post-operative infection. The importance of removing such local conditions as might lead to infection from without is generally recognized, he says, but systemic conditions which are liable to produce a non-purulent infection from within are not so evident nor so often sought. From personal observations he is convinced that the comparative infrequency of complications following operations in Smith's clinic in India is due not only to the thoroughness of his operation, which does away with capsular remains, cortical débris and an after cataract, but also and perhaps of more importance from a medical standpoint—to the diet, age and physical condition of the patients, most of whom are agricultural people, the men being tall, muscular and with no superfluous fat. They live chiefly on a rice-milk diet and very little meat and a few vegetables and take very little alcohol. Working long hours, with a limited diet and perspiring freely, they are not troubled much with faulty metabolism or acid-autointoxication. In the obese,

sedentary American patient the conditions favorable for auto-intoxication are more frequently found and it is Greene's observation that in this class of patients non-suppurative postoperative troubles are most often encountered. While only a small percentage of cataract patients suffer from some form of uveitis resulting from endogenous infections the author believes that it can be kept very small by proper eliminative treatment. When, on opening the eye after a cataract operation, there is found any of the following conditions: photophobia, chemosis, excessive redness and discharge, a cloudy cornea, cortical débris, muddy aqueous and discoloration of the iris, with perhaps a gaping wound or vitreous presenting and iris prolapsed, things are not progressing rightly and although it may not be certain whether the trouble is due to *exogenous infection* or to *endogenous inflammation* it is highly important that active elimination through the bowels, kidneys and skin should be induced at once. Cases of delayed healing of the section are often due to high blood pressure and high intra-ocular tension. In such cases drugs to reduce blood pressure and high intra-ocular tension are indicated, of which purgatives seem to be the most important. The nitrites and iodids internally and eserin or pilocarpin locally are of value. Sodium salicylate in large doses is recommended, and deep injections behind the eye of cyanid of mercury may be employed. Mercury to saturation of the patient is relied upon by many and is of undoubted value.

CHANGES OCCURRING IN THE REFRACTION OF CORRECTED AMETROPIC EYES.

William Zentmayer (*Jour. A. M. A.*, August 5, 1911) has made a careful analysis of the changes of refraction occurring in 550 eyes examined one or more times after a lapse of several years. He records his findings and from his study of the subject offers the following conclusions:

1. Ametropia tends to change in degree even when the error is carefully and repeatedly corrected and the glasses worn constantly.

2. Almost every conceivable change may occur.

3. The tendency is in the direction of an increase in the static refraction with an increase in the astigmatism.

4. In compound hyperopic astigmatism the most frequent change is a decrease of the hyperopia with an increase in the astigmatism.

5. In compound myopic astigmatism the most frequent change is an increase in the myopia with an increase in the astigmatism.

6. There is no greater tendency for compound myopic astigmatism to change than there is for compound hyperopic astigmatism to change.

7. Simple myopia (rare) is never a stable condition, it almost invariably increases in amount.

8. Simple myopic astigmatism is the least, and simple hyperopic astigmatism the next least stable of astigmatic errors.

9. Simple hyperopia sometimes remains constant, but is subject to undergo both an increase and decrease.

10. In compound astigmatism the static refraction may change without a change taking place in the astigmatism and *vice versa*.

11. In mixed astigmatism, the myopic meridian most frequently changes and shows an increase, although an increase of the hyperopic meridian with a decrease in the myopic meridian in the same eye probably occurs with the most frequency.

12. Astigmatism is often acquired in hyperopic eyes, and as frequently in the third as in the fifth decade. Before the forty-fifth year the axis of the acquired astigmatism is as frequently with as against the rule, but after the forty-fifth year it is against the rule in 85 per cent. of patients.

13. The total astigmatism may be lost probably in any decade, but more commonly in the later decades and at this time probably represents a transitional stage to an astigmatism against the rule.

14. A change in the axis of astigmatism occurs in about 50 per cent. of the cases.

15. The changes in the refraction occur with most frequency in the age period of from 20 to 45 years.

16. After the forty-fifth year changes in the amount of hyperopia in compound hyperopic astigmatism occur much more frequently than do similar changes in compound myopic astigmatism.

17. There is no greater tendency toward an increase in hyperopia between the fifty-fifth and sixty-fifth years than between the forty-fifth and fifty-fifth years.